	Application No.	Applicant(s)	
Notice of Allowability	10/724,058	PARK ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed, 07/29/2005*.

2. ☒ The allowed claim(s) is/are *1,4-6,8,9 and 11-15*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some*   c) ☐ None of the:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

        Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *10/05/2005* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

Examiner's Amendment

1.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael Kondoudis on 10/05&06/2005. Examiner's Amendment was necessary to fix minor informalities regarding claims 5, 9 and 10.

The application, specifically the claims, has been amended as follows:

1. (Previously Presented)

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented)

5. (Currently Amended) The brightness control apparatus of ~~claim 1~~claim 4, wherein the cumulative distribution function calculator calculates the cumulative distribution function using a formula as follows:

$$CDF(K) = \sum_{i=0}^{k} PDF(i)$$

where, CDF(K) denotes a cumulative distribution function, PDF(t) is the probability

density function, and k is a maximum pixel value.

6. (Previously Presented)

7. (Cancelled)

8. (Previously Presented)

9. (Currently Amended) A brightness level stretching method, comprising:

calculating a probability density function based on pixel values of respective pixels of an

input image signal

setting a first upper limit value and a first lower limit value with respect to pixel values

which are equal to or smaller than a first predetermined level in the probability density function;

setting a second upper limit value and a second lower limit value with respect to pixel

values over a second predetermined level in the probability density function;

setting ~~an~~ a third upper limit value and a third lower limit value for a range of pixel

values not covered in either the first setting or the second setting;

calculating a cumulative distribution function for the probability density function

controlled by the set first upper limit value and the set first lower limit value; and

calculating brightness levels corresponding to the input image signal based on the

calculated cumulative distribution function by adjusting the probability density function

according to the first, second and third upper value limits and the first, second and third lower

value limits.

10. (Cancelled)

11-15. (Previously Presented)

Priority

2.   Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

3.   Acknowledgment is made of applicant's claim for domestic priority under 35

U.S.C. 119(e).

Allowable Subject Matter

4.   Claims 1, 4-6, 8, 9 and 11-15 are allowed.

The following is an examiner's statement of reasons for allowance:

In reference to claim 1, the prior art of record (Kim et al. (U.S. Patent 5,963,665) does

not explicitly disclose converting a cumulative distribution function into a mapping function of

brightness levels using the formula recited in claim 1, in combination with the further limitations

of claim 1.

In reference to claim 4, the prior art of record (Kim et al. (U.S. Patent 5,963,665) does

not explicitly disclose a Bin Underflow Bin Overflow to adjust the probability density function

according to the upper value limits and the lower value limits set by the first setter, second setter

and third setter respectively, in combination with the further limitations of claim 4.

In reference to claims 5 and 8, claims 5 and 8 depend upon allowable claim 1 and are

therefore also deemed allowable.

In reference to claim 6, claim 6 depends upon allowable claim 4 and is therefore also

deemed allowable.

In reference to claim 9, the prior art of record (Kim et al. (U.S. Patent 5,963,665) does

not explicitly disclose calculating brightness levels corresponding to an input image signal based

on a calculated cumulative distribution function by adjusting the probability density function

according to first, second and third upper value limits and first, second and third lower value

limits, in combination with the further limitations of claim 9.

In reference to claim 11, the prior art of record (Kim et al. (U.S. Patent 5,963,665) does

not explicitly disclose adjusting the probability density function according to the upper value

limits and the lower value limits set by the first setter and second setter respectively, in

combination with the further limitations of claim 11.

In reference to claims 12-14, claims 12-14 depend upon allowable claim 11 and are

therefore also deemed allowable.

In reference to claim 15, claim 15 depends upon allowable claim 9 and is therefore also

deemed allowable.

Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

Response to Arguments

5.   The cancellation of claims 2, 3 and 7 is noted.

6.   Applicant's arguments, see page 7 of Applicant's Remarks, filed 07/29/05, with respect

to the objection of claim 8 have been fully considered and are persuasive. The objection of claim

8 has been withdrawn since minor informalities have been corrected for.

7.   Applicant's arguments, see page 7 of Applicant's Remarks, filed 07/29/05, with respect

to the 35 U.S.C 112 2nd paragraph rejection of claims 11-14 have been fully considered and are

persuasive. The 35 U.S.C 112 2nd paragraph rejection of claims 11-14 has been withdrawn since

antecedent basis has been corrected in claim 11.

8.   Applicant's arguments, see pages 7-8 of Applicant's Remarks, filed 07/29/05, with

respect to the 35 U.S.C 102 rejection of claim 9 have been fully considered and are persuasive.

The 35 U.S.C 102 rejection of claim 9 has been withdrawn.

References Cited

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

    a.   Park et al. (U.S. Patent 6,507,668 B1)

- Park et al. discloses an image enhancing apparatus that includes a histogram

  equalizer and a compensating circuit utilizing a PDF calculator.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391.

The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00

AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 Customer Service Office whose telephone

number is (703) 306-0377.

aac

10/6/05

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600